

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of Claims**

1. (currently amended) A dental articulating system configured to duplicate at least a portion of a patient's mouth for use in producing a dental prosthesis, the device comprising:
  - a) a pair of trays, pivotally coupled together;
  - b) a plurality of registration pin holes, formed in at least one of the trays;
  - c) a plurality of indentations, each associated with one of the plurality of registration pin holes and ~~at least one indentation,~~ formed in at least one of the trays at a bottom of ~~at least one of the plurality of registration pin holes,~~ and sized to receive a tip of a finger or thumb;
  - d) a thin membrane, disposed across the registration pin holes between the registration pin holes and the indentation, configured to close off the registration pin holes and resist dental casting material from substantially filling the registration pin holes; and
  - e) at least one registration pin, disposable in at least one of the plurality of registration pin holes, the thin membrane being breakable by the registration pin inserted into the registration pin hole with the registration pin being extendable through the thin membrane and into the indentation.
2. (canceled)
3. (currently amended) A system in accordance with claim 1, wherein the tray and the thin membrane are formed integrally with one another and of the same material.
4. (original) A system in accordance with claim 1, wherein the thin membrane is separately formed from the tray and attached to the tray.
5. (canceled)

6. (canceled)

7. (canceled)

8. (original) A system in accordance with claim 1, further comprising:

registration struts, formed in at least one of the trays, having a hexagonal cross section.

9. (original) A system in accordance with claim 1, further comprising:

a trough formed in at least one of the trays by a perimeter wall, the perimeter wall having a wavy profile with a plurality of arcuate indentations.

10. (currently amended) A system in accordance with claim 1, further comprising:

a hinge, associated ~~integrally formed~~ with the trays and positioned between the trays, including:

- i) a pivot axle, associated with one of the trays;
- ii) a shoulder, extending at least partially around the pivot axle and creating two axle portions extending on each side of the shoulder; and
- iii) a pair of fingers, associated with another of the trays, pivotally positioned on opposite sides of the pivot axle and on opposite sides of the shoulder and separated by both the axle and the shoulder.

11. (currently amended) A method for forming a dental model, comprising the steps of:

- a) pressing a registration pin through a thin membrane formed integrally with a working tray of a dental articulator and extending across at least one a plurality of registration pin hole holes on the a working tray of the a dental articulator so that the registration pin breaks the thin membrane and extends through the thin membrane;
- b) forming a prepped model of a prepped tooth by disposing dental casting

material over the registration pin on the working tray of the dental articulator while the registration pin remains in the registration pin hole, the prepped model of the prepped tooth to receive a dental prosthesis;

c) maintaining a position of the registration pin in the registration pin hole through the thin membrane while the prepped model of the prepped tooth is formed; and

d) forming an opposing model of an opposing tooth on an opposing tray of the dental articulator, the opposing model of the opposing tooth opposing the prepped tooth.

12. (original) A method in accordance with claim 11, further comprising the step of:  
segmenting the prepped model on sides corresponding to the prepped tooth to form a prosthesis die.

13. (previously presented) A method in accordance with claim 11, wherein the step of forming the prepped model further includes the step of:

disposing dental casting material over the registration pin holes in the working tray with the thin membrane formed integrally with the working tray and extending across the registration pin holes to resist dental casting material from substantially filling the registration pin holes.

14. (original) A method in accordance with claim 11, wherein the step of pressing the registration pin through the thin membrane further includes the step of:

pressing the registration pin through a thin membrane extending across the registration pin hole near a bottom of the registration pin hole.

15. (canceled).

16. (original) A method in accordance with claim 11, further comprising the step of:  
pushing a thumb or finger into a thumb indentation positioned at a bottom of a registration pin hole to push a registration pin out of the registration pin hole.

17. (original) A method in accordance with claim 11, wherein the step of forming the prepped model further includes the step of:

disposing dental casting material around registration struts in at least one of the trays, the registration struts having a hexagonal cross section.

18. (original) A method in accordance with claim 11, wherein the step of forming the prepped model further includes the step of:

disposing dental casting material in at least one of the trays with a trough formed by a perimeter wall, the perimeter wall having a wavy profile with a plurality of arcuate indentations.

19. (currently amended) A method in accordance with claim 11, further comprising the step of:

pivoting the working and opposing trays about a hinge associated integrally ~~formed~~ with the trays, the hinge including a first portion with a shoulder circumscribing an axle and a second portion with opposing fingers movably disposed on opposite sides of the axle and on opposite sides of the shoulder.

20. (previously presented) A method in accordance with claim 11, wherein the steps of forming the prepped and opposing models further includes the steps of:

a) obtaining an impression of at least some of a patient's teeth, the impression including a prepped side with an impression of the prepped tooth to receive the dental prosthesis, and an opposing side with an impression of the opposing tooth opposing the prepped tooth;

b) introducing dental casting material between the opposing tray and the opposing side of the impression to form the opposing model of the opposing tooth;

c) introducing dental casting material between the working tray and the prepped side of the impression to form the prepped model of the prepped tooth; and

d) removing the impression from the dental articulator leaving the opposing and the prepped models on respective opposing and working trays.

21. (currently amended) A method for forming a dental model, comprising the steps of:

a) obtaining an impression of at least some of a patient's teeth, the impression including a prepped side with an impression of a prepped tooth to receive a dental prosthesis, and an opposing side with an impression of an opposing tooth opposing the prepped tooth;

b) obtaining a dental articulator with opposing and working trays pivotally coupled together and a thin membrane formed integrally with one of the working trays and extending across a plurality of registration pin holes in the working tray;

c) disposing dental casting material on the opposing tray and in the opposing side of the impression;

d) disposing the opposing side of the impression over the opposing tray so that dental casting material extends therebetween and forms an opposing model of the opposing tooth;

e) positioning at least one registration pin in the plurality of registration pin holes in the working tray at a location corresponding to the prepped tooth;

f) pressing the at least one registration pin through the thin membrane extending across the ~~at least one of the~~ plurality of registration pin holes;

g) disposing dental casting material in the prepped side of the impression and on the working tray with the at least one registration pin remaining in the at least one of the plurality of registration pin holes to resist dental casting material from entering the plurality of registration pin holes;

h) maintaining a position of the at least one registration pin in the registration pin hole through the thin membrane while the dental casting material is disposed on a surface of the working tray and over a head of the at least one registration pin;

i) disposing the working tray over the prepped side of the impression so that the dental casting material extends therebetween and forms a prepped model of the prepped

tooth; and

j) removing the impression from the dental articulator.

22. (original) A method in accordance with claim 21, further comprising the step of:  
segmenting the dental casting material of the prepped model on sides  
corresponding to the prepped tooth to form a prosthesis die.

23. (canceled).

24. (original) A method in accordance with claim 21, wherein the step of pressing the  
registration pin through the thin membrane further includes the step of:  
pressing the registration pin through the thin membrane extending across the  
registration pin hole near a bottom of the registration pin hole.

25. (canceled).

26. (original) A method in accordance with claim 21, wherein the step of introducing  
dental casting material further includes the step of:  
disposing dental casting material around registration struts in at least one of the  
trays, the registration struts having a hexagonal cross section.

27. (original) A method in accordance with claim 21, wherein the step of introducing  
dental casting material further includes the step of:  
disposing dental casting material in a trough formed by a perimeter wall, the  
perimeter wall having a wavy profile with a plurality of arcuate indentations.

28. (currently amended) A method in accordance with claim 21, further comprising the  
step of:  
pivoting the lower and upper trays about a hinge to which the trays are

~~coupleable integrally formed with the trays~~, the hinge including a first portion with a shoulder circumscribing an axle and a second portion with opposing fingers movably disposed on opposite sides of the axle and on opposite sides of the shoulder.

Claims 29-32 (canceled)

33. (currently amended) A method for forming a dental model, comprising the steps of:

a) obtaining an impression of at least some of a patient's teeth, the impression including a prepped side with an impression of the prepped tooth to receive the dental prosthesis, and an opposing side with an impression of the opposing tooth opposing the prepped tooth;

b) pressing a registration pin through a thin membrane formed at a die receiving surface of a working tray of a dental articulator and extending across a plurality of registration pin holes on the a-working tray of the a-dental articulator so that the registration pin breaks the thin membrane and extends through the thin membrane;

c) introducing dental casting material on the working tray and over the registration pin while the registration pin remains in the registration pin hole, to form a prepped model of a prepped tooth on the working tray of the dental articulator, the prepped model of the prepped tooth to receive a dental prosthesis;

d) introducing dental casting material between an opposing tray and the opposing side of the impression to form an opposing model of an opposing tooth on an opposite tray of the dental articulator, the opposing model of the opposing tooth opposing the prepped tooth.

34. (canceled).

35. (canceled).

36. (canceled).

37. (previously presented) A system in accordance with claim 1, wherein the at least one indentation is formed in the tray separate from a perimeter wall of the tray.

38. (currently amended) A method in accordance with ~~claim 33~~claim 11, wherein the step of forming the prepped model further includes the step of:

disposing dental casting material over the registration pin holes in the working tray with the thin membrane formed separately from the working tray and attached to the working tray.

39. (canceled).

40. (currently amended) A dental articulating system configured to duplicate at least a portion of a patient's mouth for use in producing a dental prosthesis, the device comprising:

- a) a pair of trays, pivotally coupled together;
- b) a plurality of registration pin holes, formed in at least one of the trays;
- c) a thin membrane, formed integrally with at least one of the trays or formed at a die receiving surface of one of the trays and disposed across the registration pin holes ~~below a surface of the at least one of the trays~~, configured to close off the registration pin holes and resist dental casting material from substantially filling the registration pin holes;
- d) at least one registration pin, disposable in at least one of the plurality of registration pin holes, the thin membrane being breakable by the registration pin inserted into the registration pin hole with the registration pin being extendable through the thin membrane; and
- e) wherein each of the pin holes comprises a substantially round elongate chamber having a depth greater than a width, and wherein the thin membrane ~~creates an air pocket in the elongate chamber when casting material is poured to~~ resists dental casting material from substantially filling the elongate chamber.



41. (canceled).

42. (previously presented) A dental articulating system configured to duplicate at least a portion of a patient's mouth for use in producing a dental prosthesis, the device comprising:

- a) a pair of trays, pivotally coupled together;
- b) a plurality of registration pin holes, formed in at least one of the trays;
- c) a thin membrane, disposed across the registration pin holes, configured to close off the registration pin holes and resist dental casting material from substantially filling the registration pin holes;
- d) at least one registration pin, disposable in at least one of the plurality of registration pin holes, the thin membrane being breakable by the registration pin inserted into the registration pin hole with the registration pin being extendable through the thin membrane; and
- e) at least one of the pair of trays having a stop rod opening formed therein, positioned adjacent a hinge end of the tray and in-line with the registration pin holes, the stop rod opening being operable to slidably receive therein a posterior stop rod securable within the stop rod opening and having an end configured to abut against the other tray to provide a physical stop between the trays to retain a desired occlusal relationship between the trays.

43. (previously presented) The system of claim 42, further comprising a posterior stop rod, operable to be slidably secured within the opening in one of a range of positions to provide a slidably adjustable stop between the trays to retain a desired occlusal relationship between the trays.

44. (previously presented) A dental articulating system configured to duplicate at least a portion of a patient's mouth for use in producing a dental prosthesis, the device comprising:

- a) a pair of U-shaped trays, pivotally coupled together;

- b) a plurality of registration pin holes, formed in at least one of the U-shaped trays;
- c) a thin membrane, disposed across the registration pin holes, configured to close off the registration pin holes and resist dental casting material from substantially filling the registration pin holes;
- d) at least one registration pin, disposable in at least one of the plurality of registration pin holes, the thin membrane being breakable by the registration pin inserted into the registration pin hole with the registration pin being extendable through the thin membrane; and
- e) at least one of the pair of U-shaped trays having a pair of stop rod openings formed therein, each stop rod opening being positioned adjacent a hinge end of the tray on opposing sides of the U-shaped tray, the stop rod openings each being operable to slidably receive therein a posterior stop rod securable within the stop rod opening and having an end configured to abut against the other U-shaped tray to provide a physical stop between the U-shaped trays to retain a desired occlusal relationship between the trays.

45. (previously presented) The system of claim 44, further comprising at least one posterior stop rod, operable to be slidably secured within one of the pair of holes openings in one of a range of positions to provide a slidably adjustable stop between the U-shaped trays to retain a desired occlusal relationship between the U-shaped trays.

46. (previously presented) A method for forming a dental model, comprising the steps of:

- a) obtaining an impression of at least some of a patient's teeth, the impression including a prepped side with an impression of the prepped tooth to receive the dental prosthesis, and an opposing side with an impression of the opposing tooth opposing the prepped tooth;
- b) introducing dental casting material on the working tray to form a prepped

model of a prepped tooth on the working tray of the dental articulator, the prepped model of the prepped tooth to receive a dental prosthesis;

c) introducing dental casting material between an opposing tray and the opposing side of the impression to form an opposing model of an opposing tooth on an opposite tray of the dental articulator, the opposing model of the opposing tooth opposing the prepped tooth;

d) slidably disposing a posterior stop rod within a stop rod opening formed in at least one of the working tray and the opposing tray, the opening being positioned adjacent a hinge end of the tray between the hinge end of the tray and a hinge associated with the tray;

e) adjusting a position of an end of the posterior stop rod relative to the hinge end of the tray by sliding the rod within the stop rod opening; and

f) securing the posterior stop rod within the stop rod opening to provide a physical stop between the working and opposing trays to retain a desired occlusal relationship between the trays.

47. (previously presented) The method of claim 46, wherein the step of securing the posterior stop rod within the stop rod opening includes the step of bonding the stop rod within the stop rod opening.

48. (previously presented) The method of claim 46, comprising the further steps of: pressing a registration pin through a thin membrane extending across a plurality of registration pin holes on the working tray of the dental articulator so that the registration pin breaks the thin membrane and extends through the thin membrane; and

introducing the dental casting material on the working tray and over the registration pin while the registration pin remains in the registration pin hole to form a prepped model of a prepped tooth on the working tray of the dental articulator, the prepped model of the prepped tooth to receive a dental prosthesis.

49. (new) The method of claim 11, wherein the thin membrane is disposed above a bottom surface of the working tray at a bottom of the registration pin hole.

50. (new) The method of claim 11, wherein the thin membrane is formed as an extension of an interior wall of the registration pin hole.

51. (new) The method of claim 11, wherein the thin membrane is disposed inside the registration pin hole between a die receiving surface at a top of the registration pin hole and a bottom surface at a bottom of the registration pin hole.

52. (new) The method of claim 21, wherein the thin membrane is disposed above a bottom surface at a bottom of the registration pin hole.

53. (new) The method of claim 21, wherein the thin membrane is formed as an extension of an interior wall of the registration pin hole.

54. (new) The method of claim 21, wherein the thin membrane is disposed inside the registration pin hole between a die receiving surface at a top of the registration pin hole and a bottom surface at a bottom of the registration pin hole.

55. (new) The method of claim 33, wherein the thin membrane is disposed on the die receiving surface and is sized and shaped to extend over the plurality of registration pin holes without covering any structure extending from the die receiving surface.

56. (new) The method of claim 33, further comprising registration struts extending from the die receiving surface; and wherein the thin membrane is disposed on the die receiving surface without contacting the registration struts.

57. (new) The system of claim 40, wherein the thin membrane is disposed on the die

receiving surface and is sized and shaped to extend over the plurality of registration pin holes without covering any structure extending from the die receiving surface.

58. (new) The system of claim 40, further comprising registration struts extending from the die receiving surface; and wherein the thin membrane is disposed on the die receiving surface without contacting the registration struts.